SONY

3-759-182-24 (1)

Video Camera Recorder 8

CCD-FX730V

Operation Manual

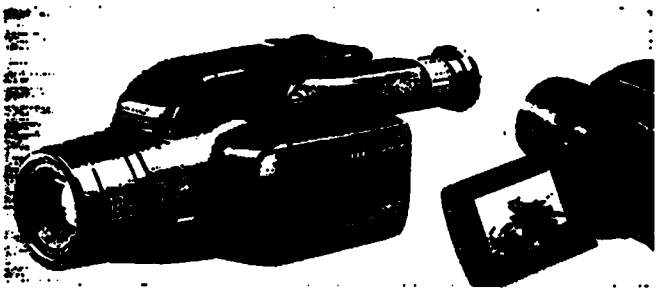
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the model and serial numbers in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. CCD-FX730V
Serial No. _____

Model No. AC-V _____
Serial No. _____



Video 8 Handycam

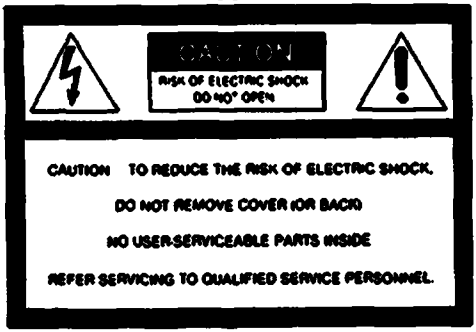
© 1994 by Sony Corporation

Welcome to Video 8

Congratulations on your purchase of this Sony Handycam® camcorder. With your Handycam you can capture life's precious moments with superior picture and sound quality.
Your Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

RECYCLING NICKEL-CADMIUM BATTERIES

Ni-Cd

NICKEL-CADMIUM BATTERY. MUST BE DISPOSED OF PROPERLY.

Nickel-Cadmium batteries are recyclable. You can help preserve our environment by returning your unwanted batteries to your nearest Sony Service Center or Factory Service Center for collection, recycling or proper disposal.

Note: In some areas the disposal of nickel-cadmium batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)
For the Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution: Do not handle damaged or leaking nickel-cadmium batteries.

For Customers in the U.S.A.

WARNING

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For Customers in CANADA

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

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Notes and Precautions

As you read through this manual, buttons and settings on the camcorder are shown in capital letters. e.g., "Set the POWER switch to CAMERA.
Photographs taken with a still camera are used for in the descriptions of the images seen in the viewfinder and on the LCD. These photos will differ from what you will actually be able to see in the viewfinder and on the LCD.

Note on TV Color Systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV. When you want to use a PAL-M system-based TV, you will need an NTSC/PAL-M transcoder (as this is an NTSC system based camcorder). Please check the list on page 39 to find out the TV color system used in your country.

Precaution on Copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on Camcorder Care

- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [a]
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight. [c]

Please also refer to the precautions starting on p. 37 in addition to the above precautions.

Charging and Installing the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC-V25A/V25B AC power adaptor.

Charging the Battery Pack

Charge the battery pack on a flat surface without vibration.

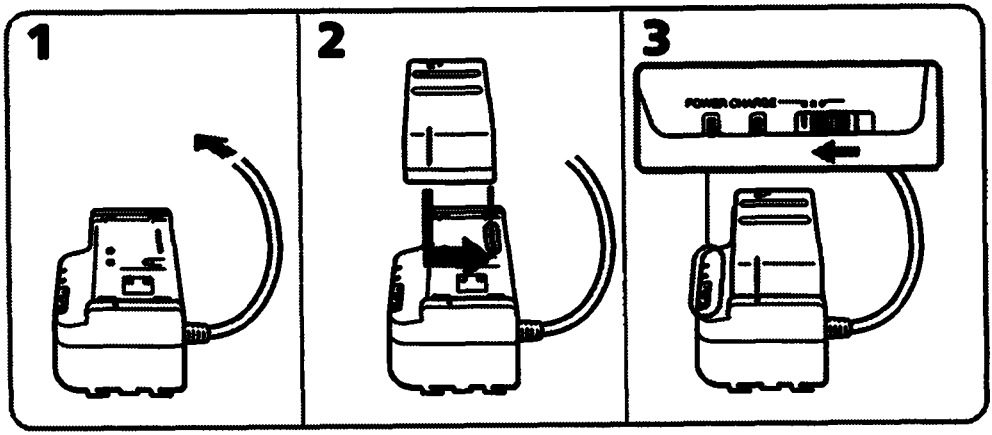
(1) Connect the power cord to a wall outlet.

(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow.

(3) Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Set the selector to the center position and unplug the unit from the wall outlet. Then remove the battery pack and install it on the camcorder.

To stop charging, set the selector to the center position.



Charging Time

Battery pack	NP-66 (supplied)	NP-90 NP-90D	NP-80 NP-80D	NP-77H	NP-66H	NP-60D	NP-55H
Charging time*	70	200	190	160	120	90	80

* Approximate minutes to charge an empty battery pack using the AC-V25A/V25B (Lower temperatures require a longer charging time.)

Battery Life

Battery Pack		NP-66 (supplied)	NP-90 NP-90D	NP-80 NP-80D	NP-77H	NP-66H	NP-60D	NP-55H
While recording**	LCD open	40 (65)	75 (135)	75 (120)	70 (120)	55 (85)	30 (55)	30 (50)
	LCD close	50 (95)	95 (190)	90 (170)	85 (160)	65 (120)	45 (85)	40 (75)
While playing back on LCD***		95	190	170	160	120	85	75

** Approximate minutes when recording while you repeat recording start/stop or zooming and turning the power on/off. The actual battery life may be shorter.
Approximate continuous recording time indoors is indicated in parentheses.
*** Approximate continuous playback time indoors.

Important!

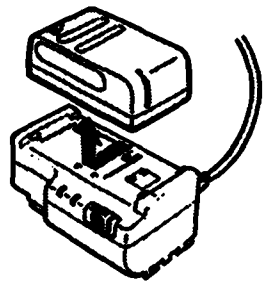
Use the battery completely before re-charging!

Before you recharge the battery pack, make sure the battery has been used up (discharged) completely. Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.

To use up the battery, remove the cassette and slide the POWER switch to CAMERA with the battery pack attached, and leave the camcorder until the ⏍ indicator flashes and the red lamp flashes rapidly in the viewfinder or on the LCD screen.

Removing the Battery Pack

Slide the battery pack in the direction of the arrow.



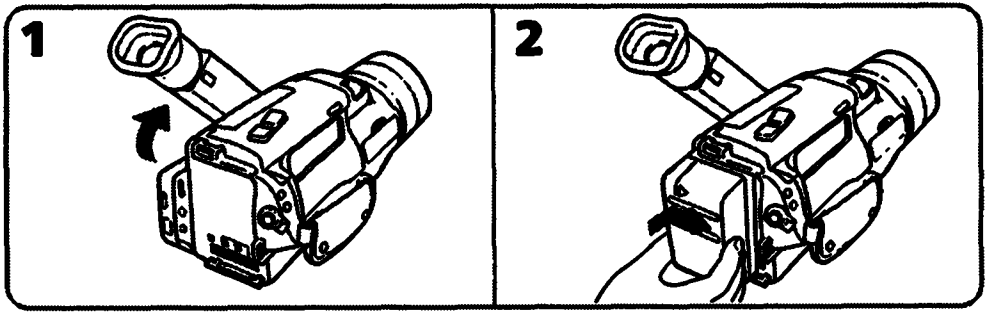
Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

See the next page for further information.

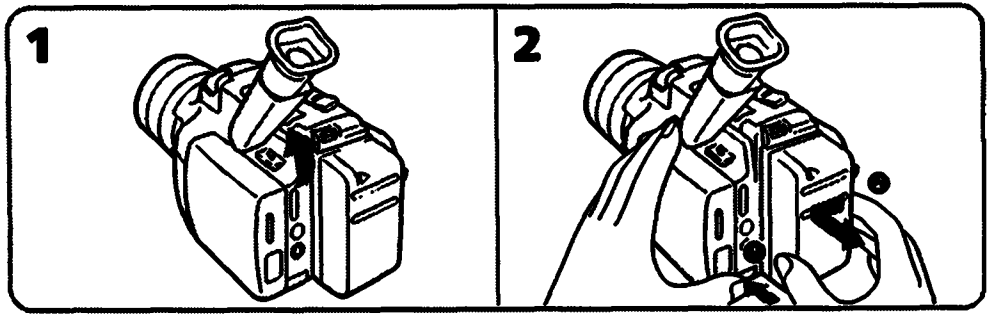
Installing the Battery Pack

(1) Lift up the viewfinder.
(2) Align the right side of the battery pack with the white line on the camcorder, and slide the battery pack to the right.



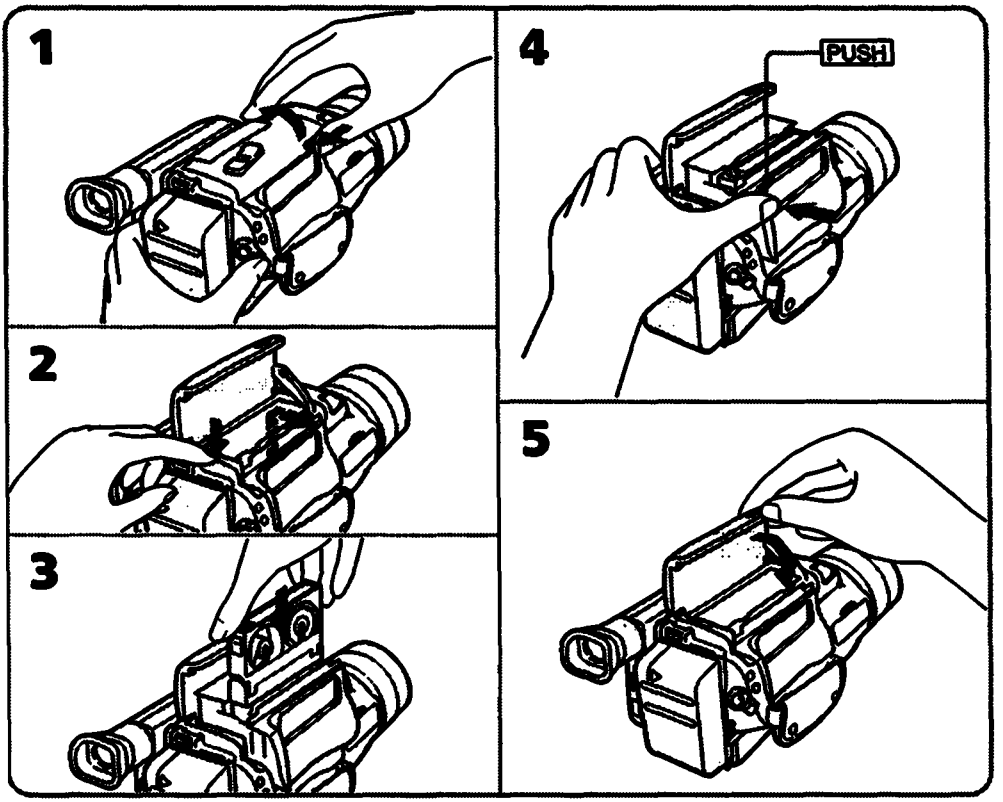
To Remove the Battery Pack

(1) Lift up the viewfinder.
(2) While pressing BATT, slide the battery pack to the left.



Inserting a Cassette

Make sure that the power source is installed.
(1) While sliding the lid lock in the direction of the arrow, lift up the lid.
(2) Press EJECT. The cassette compartment automatically lifts up and opens.
(3) Insert a cassette with the window facing out.
(4) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment.
(5) After the cassette compartment has gone down, close the lid.

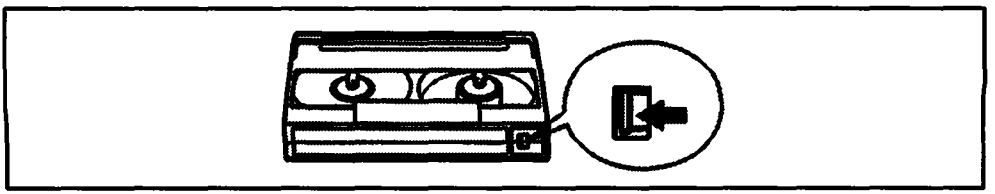


To Eject the Cassette

While sliding the lid lock in the direction of the arrow, lift up the lid of the cassette holder and press EJECT.

Preventing Accidental Erasure

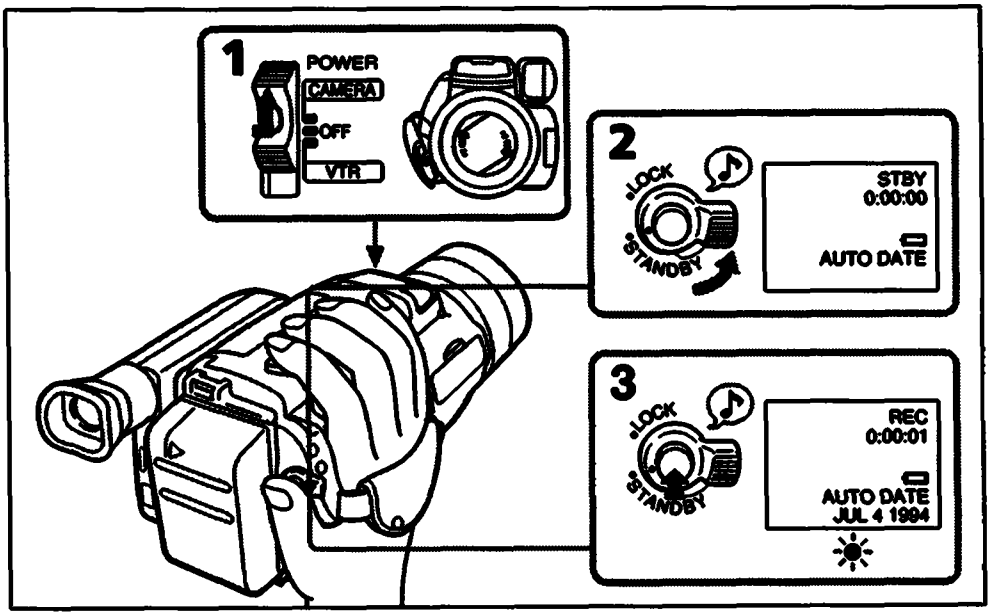
To prevent accidental erasure, slide the tab on the cassette to expose the red mark. If you try to record with the red mark exposed, the ▭ and ⏏ indicators flash in the viewfinder, and you cannot record. To re-record on this tape, slide the tab back out covering the red mark.



Camera Recording

Make sure that the power source is installed and a cassette is inserted. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day. You can hear the BEEP sound to confirm your operation.
Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA.
(2) Turn STANDBY up.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears and the red lamp lights up in the viewfinder. The camera recording/battery lamp on the viewfinder barrel also lights up.

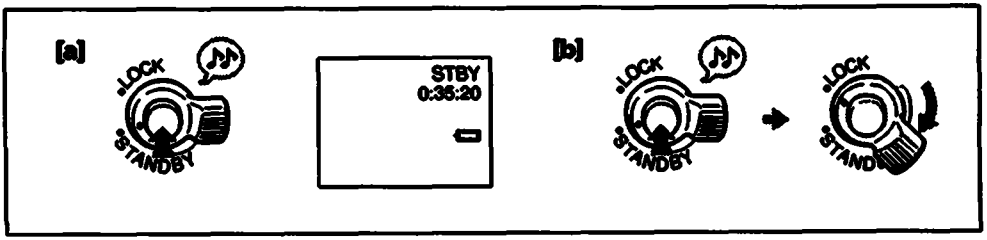


To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (Standby mode).

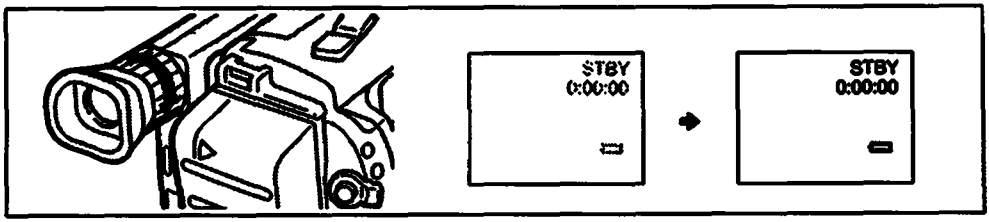
To Finish Recording [b]

Press START/STOP again. Turn STANDBY down and slide the POWER switch to OFF. The lens cover closes. Then, eject the cassette (p. 9) and remove the battery pack (p. 8).



To Focus the Viewfinder Lens

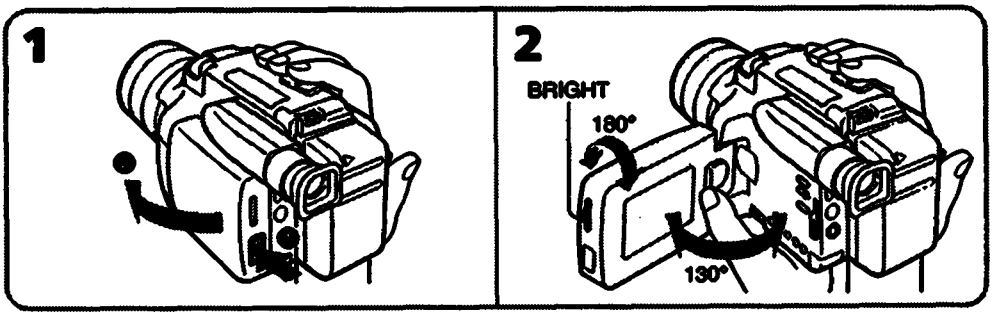
If the viewfinder is not in focus at all or when you use the camcorder after someone else has used it, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.



Using the LCD Screen

You can also record the picture while looking at the LCD screen.
When using the LCD screen, the viewfinder screen turns off automatically.
You cannot monitor the sound from the speaker during recording.

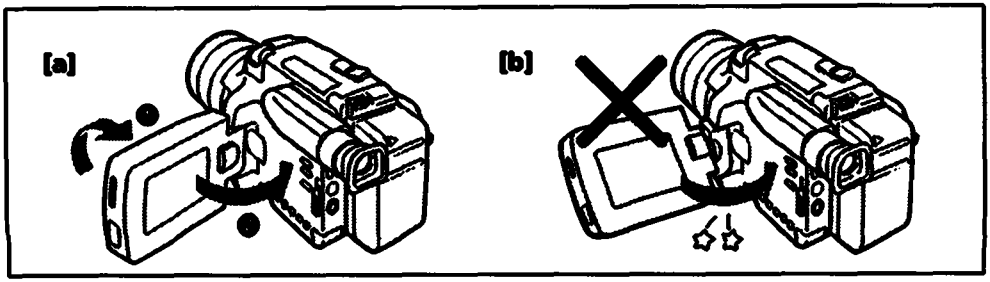
(1) While pressing PUSH OPEN, open the LCD panel.
(2) Adjust the angle of the LCD panel.
To adjust the brightness of the LCD screen, turn the BRIGHT dial.



The battery life is longer when the LCD panel is closed. Use the viewfinder instead of the LCD screen to save the battery power.

Caution on the LCD panel

Turn the LCD panel vertically until it clicks when closing the LCD panel [a]. Otherwise, the camcorder body may be damaged or the LCD panel may not close properly [b].
Close the LCD panel completely when not in use.



See the next page for further information.

Note on Standby mode
If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Note on recording
When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.
You can record tapes in SP (standard play) mode only.

Note on the tape counter
The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.

Note on beep sound
As indicated by the ♪ mark in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder (p. 50).
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

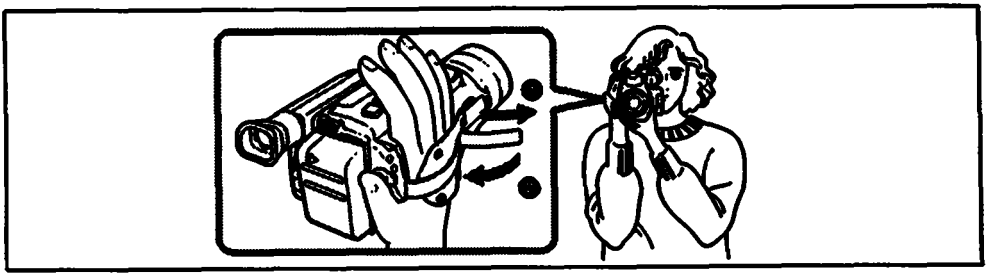
Note on the AUTO DATE feature
The clock is set to the East Coast Standard Time at the factory, but you can reset the clock in the menu system (p. 31). You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature works once a day. However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set to ON again in the menu system.

When moving from indoors to outdoors (or vice versa)
Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

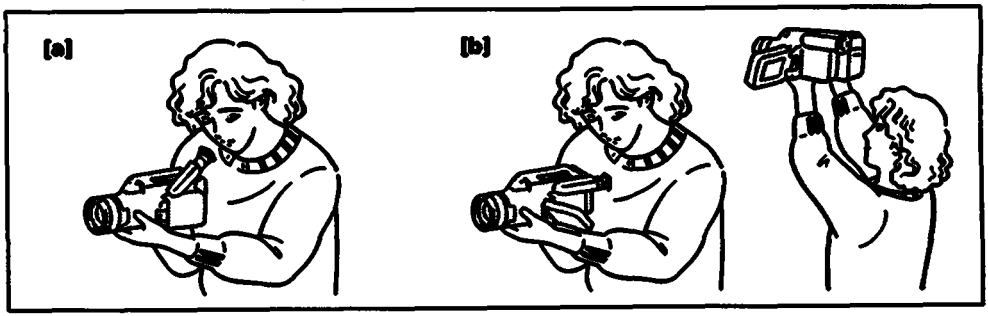
Hints for Better Shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb.



- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can record in a low position to get an interesting recording angle. Lift the viewfinder up for recording from a low position. (You can turn it up to 180 degrees.) [a]
- You can also record in a low position or even in a high position using the LCD panel. [b]

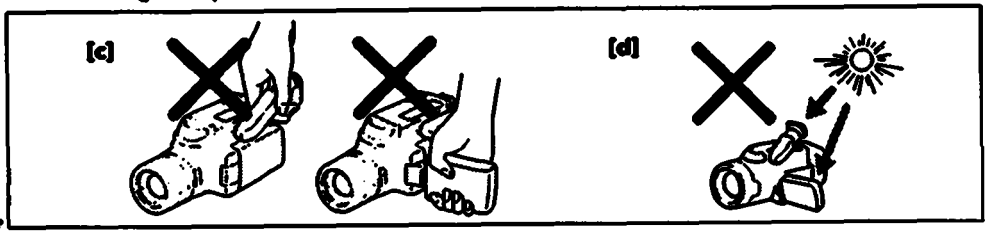


Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder (p. 44). When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 in (6.5 mm). Otherwise, the screw may damage the inner parts of the camcorder.

Cautions on the viewfinder and the LCD

- Do not pick up the camcorder by the viewfinder or by the LCD panel. [c]
- Do not place the camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or the LCD panel may be deformed. Be careful when placing the camcorder under sunlight or by the window. [d]



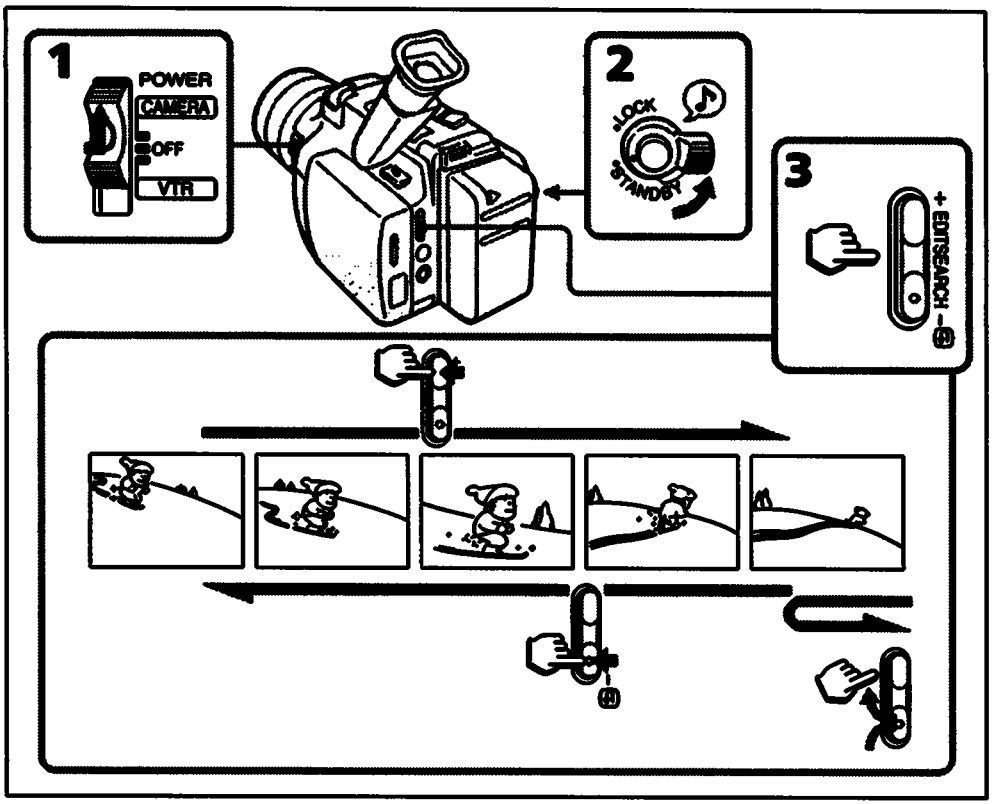
Checking the Recorded Picture

The EDITSEARCH function is used to view the recorded picture for a moment during recording. Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder. You can also review the picture on the LCD screen.

(1) While pressing the small green button on the POWER switch, slide it to CAMERA.

(2) Turn STANDBY up.

(3) Press the – (⏮) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**). You can also monitor the sound by using an earphone (not supplied).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Edit Search**).

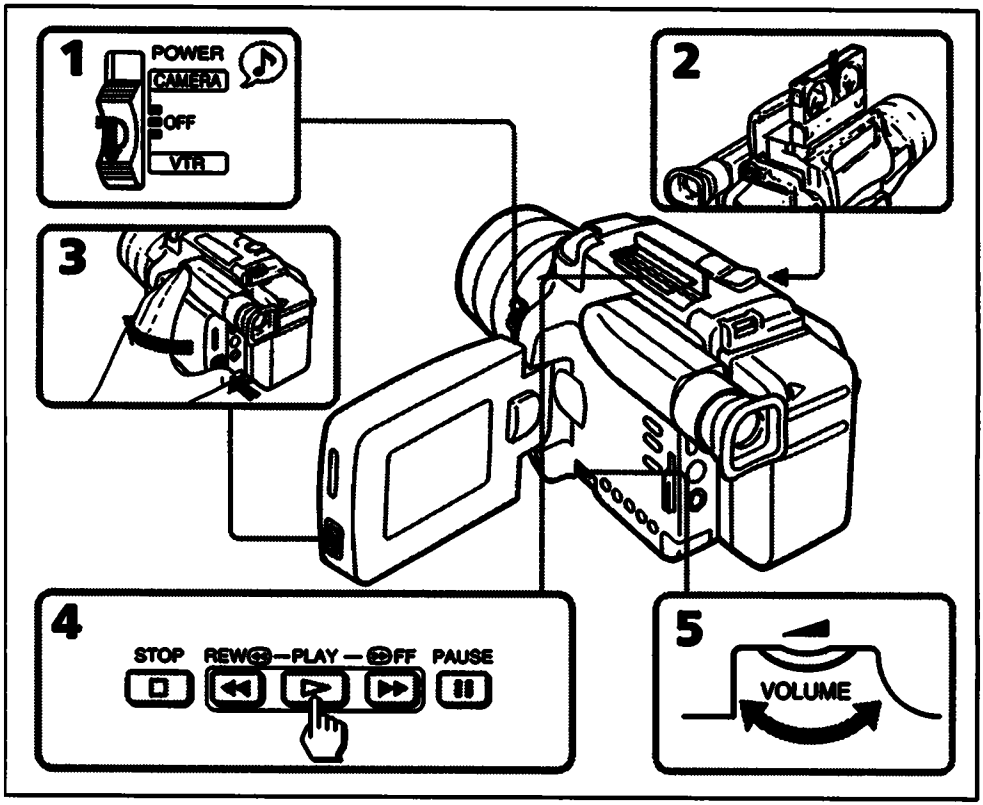


To Begin Re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

Playing Back a Tape

You can monitor the playback picture on the LCD screen.
(1) While pressing the small green button on the POWER switch, slide it to VTR.
(2) Insert the recorded tape with the window facing out.
(3) While pressing PUSH OPEN, open the LCD panel. Adjust the angle of the LCD panel or the brightness of the LCD screen if necessary (p. 11).
(4) Press ▷ to start playback.
(5) Adjust the volume using VOLUME.
You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR (p. 27).



To Stop Playback
Press □ during playback.

To Rewind the Tape
Press ◀◀.

To Advance the Tape Rapidly
Press ▶▶.

Note on DISPLAY button
Press DISPLAY to erase the screen indicators on the LCD screen. To display the indicators, press again. The indicators don't appear on the TV.

Using an earphone
Connect an earphone (not supplied) to the ⓟ jack. You can adjust the volume of the earphone using VOLUME.

To view the playback picture in the viewfinder
Close the LCD panel. The viewfinder turns on automatically. When using the viewfinder, you can monitor the sound only by using an earphone.
To view on the LCD screen again, open the LCD panel. The viewfinder turns off automatically.

Various Playback Modes

To View a Still Picture (Playback pause)
Press II during playback. To resume playback, press II or ▷.

To Locate a Scene (Picture search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To Monitor the High-speed Picture while Advancing the Tape or Rewinding (Skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To View the Picture in a Sequence of Stop-motion Images
Press EDITSEARCH in Playback pause mode. If you keep pressing EDITSEARCH, you can view the picture play back in the forward (+) or reverse (–) direction.

To View the Picture at 1/5 Speed (Slow playback) (only with the Remote Commander)
Press II▶ on the Remote Commander during playback. To resume normal playback, press ▶II. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When Playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.

Using Alternative Power Sources

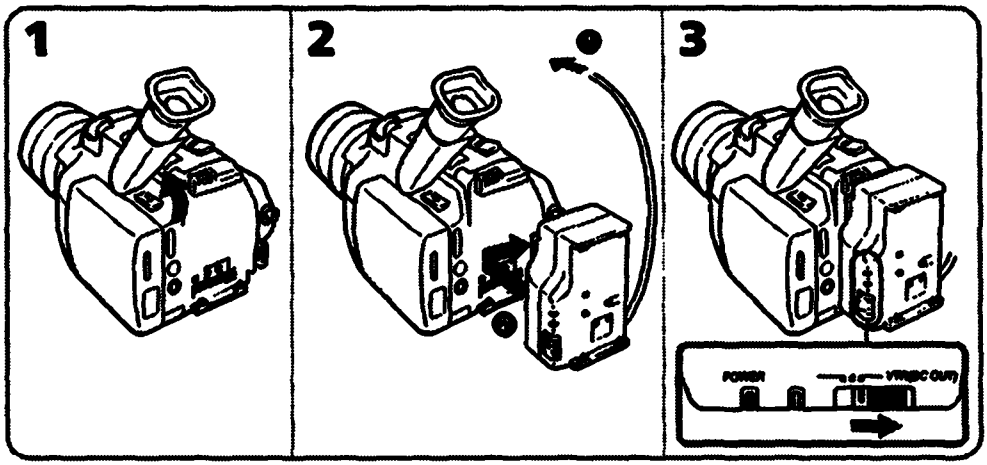
You can choose any of the following power sources for your camcorder: battery pack (p. 6), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	*House current*	AC power adaptor AC-V25A/V25B (supplied), AC-S10, AC-V55
Outdoors	Battery pack	Battery pack NP-66 (supplied), NP-90D, NP-90, NP-80D, NP-80, NP-77H, NP-66H, NP-60D, NP-55H
In the car	12 V or 24 V car battery	DC pack DCP-77

Note on power sources
Disconnecting the power source or removing the battery pack during recording or playing may damage the inserted tape. If this happens, restore the power supply again immediately.

Using House Current

To use the supplied AC-V25A/V25B AC power adaptor:
(1) Lift up the viewfinder.
(2) Connect the AC power cord to a wall outlet. Connect the bottom of the AC power adaptor to the battery mounting surface of the camcorder.
(3) Set the selector to VTR (DC OUT).



Notes on the POWER lamp
- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to the center position and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to VTR (DC OUT) again.

To Remove the Adaptor

The adaptor is removed in the same way as the battery pack. (p. 8)

Using a Car Battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To Remove the DC Pack

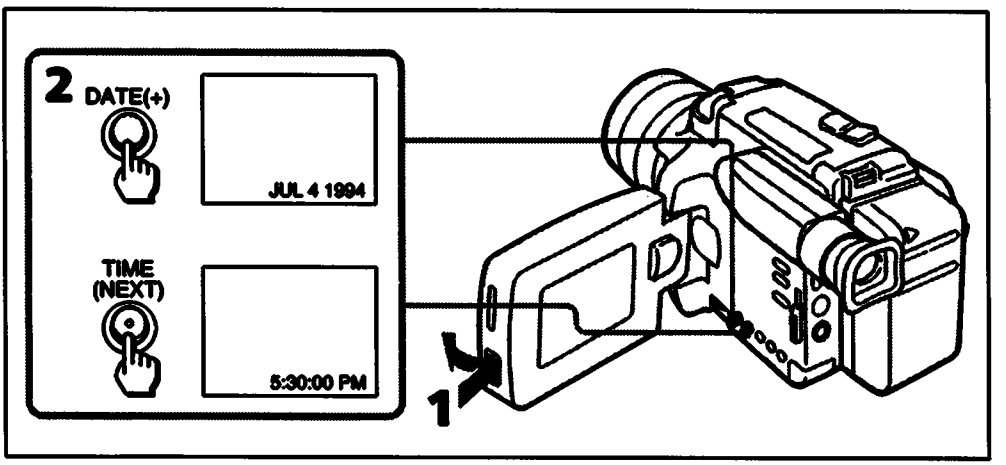
The DC pack is removed in the same way as the battery pack. (p. 8)

Options for Charging the Battery Pack

- AC-S10 AC power adaptor:
  You can charge a battery pack whether it is used up or not with this adaptor because it has a discharging function.
- BC-S10 portable battery charger (ideal for travel):
  You can charge a battery pack on 100 – 240 V AC current.

Recording with the Date or Time

You can record the date or time displayed on the LCD screen or in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator on the LCD screen or in the viewfinder is recorded.
The clock is set to the East Coast Standard Time at the factory. You can reset the clock in the menu system (p. 31).
(1) While pressing PUSH OPEN, open the LCD panel.
(2) Press DATE(+) or TIME(NEXT) before you start recording.



To Stop Recording with the Date or Time

Press DATE(+) or TIME(NEXT) again. The date or time indicator disappears. The recording continues without the date or time.

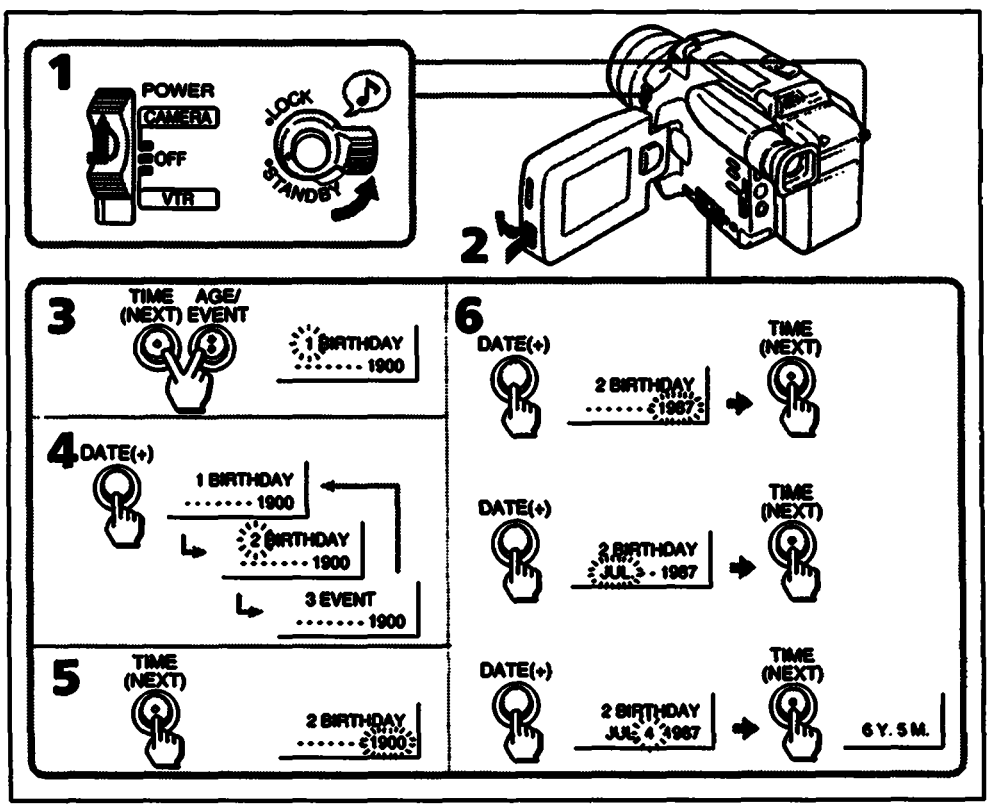
Recording with the Age

By presetting your child's birth date in your camcorder, you can record with your child's age in years and months. Once you enter the birth date of your child, the camcorder's clock will automatically update the age of your child. You can preset up to three birth dates or events in the camcorder's memory.

Storing a Birth Date in Your Camcorder

Before storing a birth date, make sure a power source and the lithium battery are installed, and the date setting is correct. The following procedure stores "Jul. 4 1987" in memory number 2 as an example.

(1) Set the camcorder in Standby mode.
(2) While pressing PUSH OPEN, open the LCD panel.
(3) Press TIME(NEXT) and AGE/EVENT simultaneously for a few seconds until the "1 BIRTHDAY --- -- 1900" indicator appears in the viewfinder or on the LCD screen.
(4) Press DATE(+) to select "2 BIRTHDAY".
(5) Press TIME(NEXT). The "1900" indicator flashes.
(6) Enter the birth date by adjusting the flashing indicators of the year, month and day by pressing DATE(+) and TIME(NEXT). Note that when you hold down DATE(+), the digits advance faster.



Erasing the Age Indicator

Press AGE/EVENT repeatedly until no indicator appears.

If You Missed the Correct Number with DATE(+)

Keep pressing DATE(+).
The year indicator changes as follows:

"1900" → "1901" → — → Current year

↑ └ Current year minus 99 ←┘

To Correct the Setting

Repeat steps from 3 to 6.

To Preset the Year before 1900

(1) After step 5, keep pressing DATE(+) until the current year is displayed.
(2) Press DATE(+) again. The year goes back 99 years.
(3) Go to step 6.

When in 2000

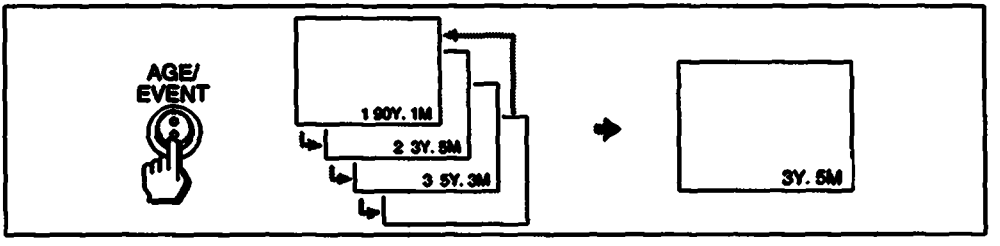
"--- – 1901" is displayed in step 3. After that, it advances every year as "1902, 1903 .....".

To Cancel the Stored Birth Date

(1) Press AGE/EVENT and TIME(NEXT) simultaneously until "1 BIRTHDAY" appears. Press DATE(+) to select a birth date to cancel.
(2) Press TIME(NEXT) twice. The month indicator flashes.
(3) Press DATE(+) repeatedly until " — – " appears.
(4) Press TIME(NEXT). The selected birth date is canceled from the memory and will not be displayed when you press AGE/EVENT.

Recording with the Age

You can record the time elapsed since the date set, for example, your child's birthday. Except for the age, date or time (p. 19) indicator, no indicator on the LCD screen or in the viewfinder is recorded. Make sure the age is set. While recording, press AGE/EVENT to select memory 1, 2 or 3.



Note on the age indicator

Each time you press AGE/EVENT, the indicator changes from 1 "The first age" to 2 "The second age", 3 "The third age" and back to no indicator. Items for which no setting has been made will be skipped. The 1, 2 or 3 indicator disappears after one second.

To Stop Recording with the Age

Press AGE/EVENT repeatedly until the age indicator disappears.

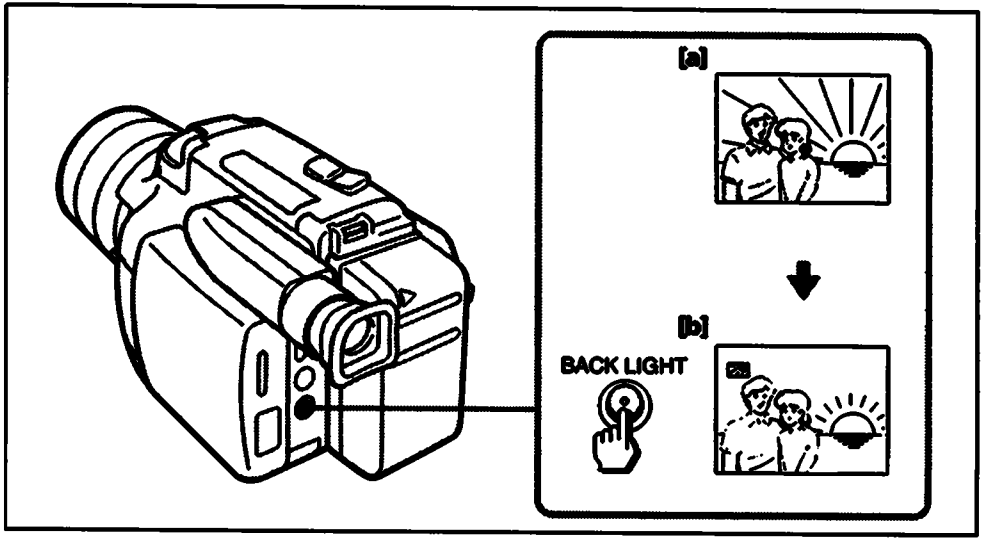
To Correct the Age Settings while Recording

Press AGE/EVENT repeatedly until the desired age appears. The recording starts after the 1, 2 or 3 indicator disappears.

Shooting with Backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▣ indicator appears in the viewfinder or on the LCD screen.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- On snow, e.g. at a ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

Using the PROGRAM AE Function

You can select from four PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can get a Portrait effect (the subject is in focus and the background is out of focus), capture high-speed action, or record night views.

Selecting the Best Mode

Select one of four modes, referring to the following.

Portrait mode
- A still subject such as a person or a flower
- Zooming in on a subject in the telephoto mode
- A subject behind an obstacle such as a net

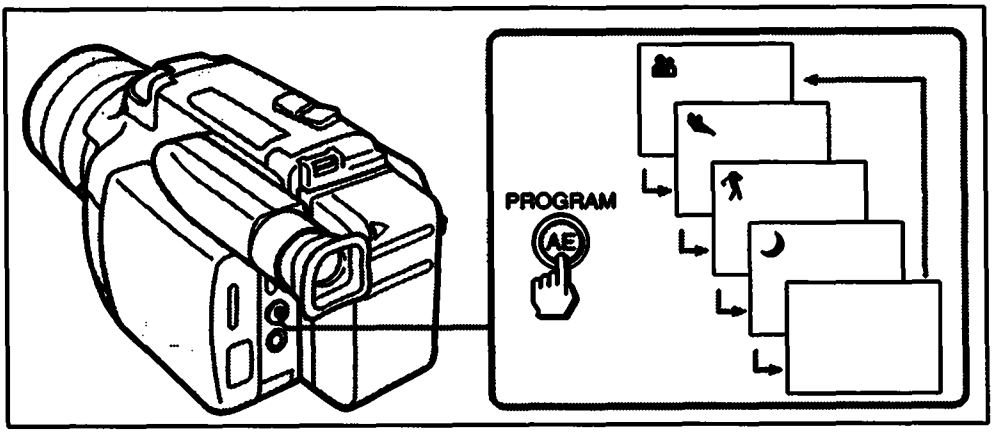
Sports mode
- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape from a moving car

High-speed shutter mode
- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in a clear, sharp picture

Twilight mode
- Recording night views, neon signs or fireworks

Using the PROGRAM AE Function

Keep pressing PROGRAM AE until the desired mode appears. The indicator of the selected PROGRAM AE mode appears in the viewfinder or on the LCD screen.



Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows:

Portrait mode — between 1/60 to 1/2000
Sports mode — between 1/60 to 1/500
High-speed shutter mode — 1/4000
Twilight mode — 1/60
Normal mode — 1/60

Fade-in and Fade-out

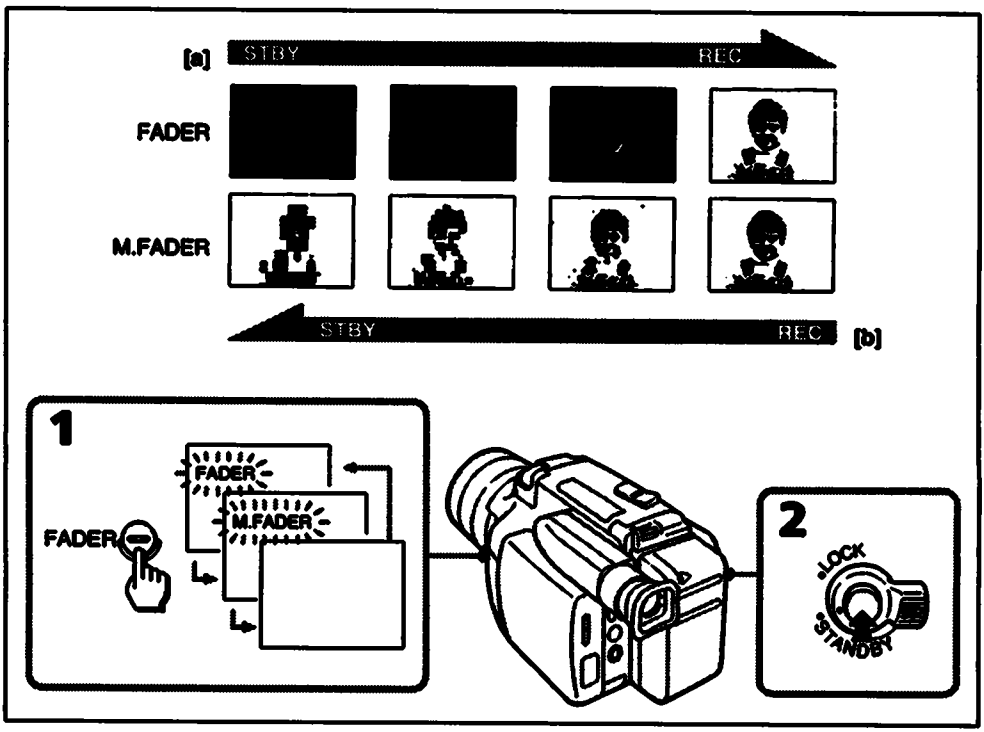
You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black or mosaic while the sound increases. When fading out, the picture gradually fades to black or mosaic while the sound decreases.

When Fading in [a]

(1) While the camcorder is in Standby mode, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When Fading out [b]

(1) During recording, press FADER. The fade indicator starts flashing.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.



To Cancel the Fade-in/Fade-out Function

Before pressing START/STOP, press FADER until the fade indicator disappears.

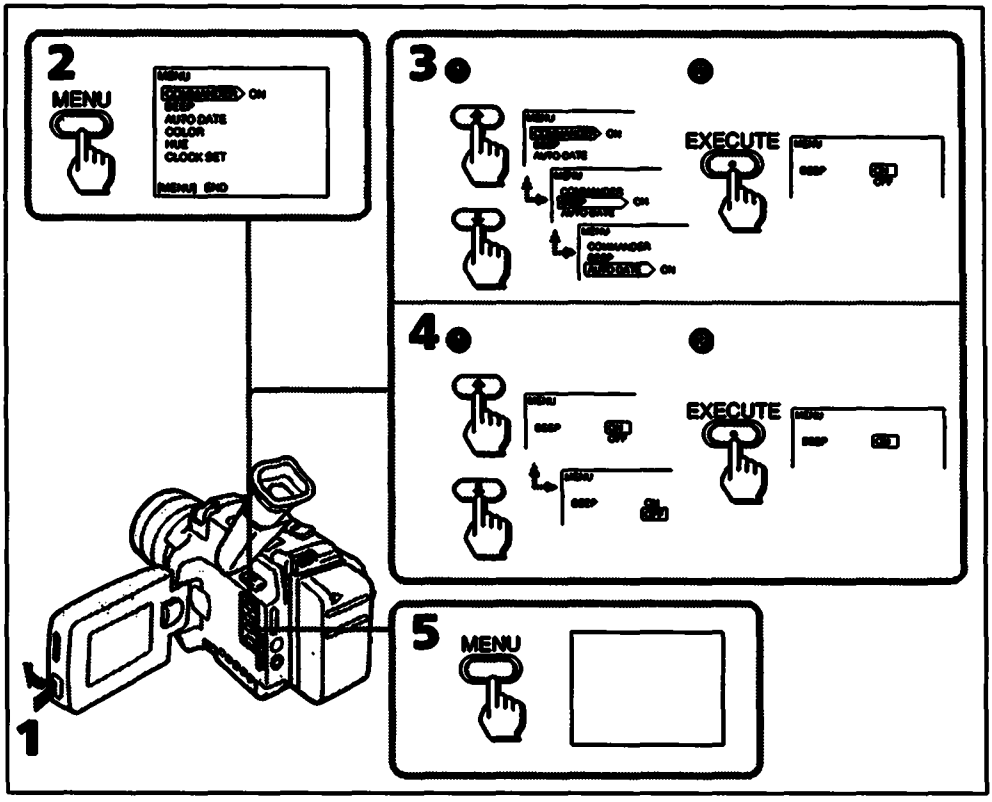
When the date, time or age indicator is displayed

The date, time or age indicator does not fade in nor fade out.

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) While pressing PUSH OPEN, open the LCD panel.
(2) Press MENU to display the menu on the LCD screen.
(3) Press ♦ or ♦ to select the desired item, then press EXECUTE.
(4) Press ♦ or ♦ to set the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 2 and 3.
(5) Press MENU to erase the menu display.



Note on BACK UP
When the BACK UP indicator appears on the menu display, the settings are retained even when the battery is removed, as long as the lithium battery is in place.

Selecting the Mode Setting of Each Item

Item for both VTR and CAMERA Mode

BEEP <ON/OFF>
- Select ON to turn the beep sound on.
- Select OFF to turn the beep sound off.

See the next page for further information.

COMMANDER <ON/OFF>
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

COLOR
Select this item and change the level of the indicator by pressing ♦ or ♦ to adjust the color intensity of the picture when using the LCD.

HUE
Select this item and move the indicator by pressing ♦ or ♦ to adjust the hue (greenish or reddish tone) of the picture when using the LCD.

Items for CAMERA Mode only

AUTO DATE <ON/OFF>
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

CLOCK SET
Select this item to reset the date or time.

Items for VTR Mode only

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

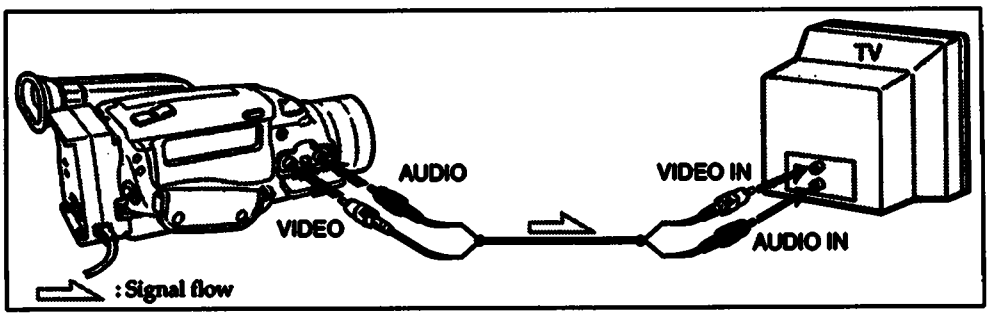
Connections for Playback

You can use the camcorder as a VCR. Connect the camcorder to the TV by using the supplied A/V connecting cable. There are two ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you use house current for the power source (p. 18).

While playing back on a TV screen, turn off the speaker volume control of the camcorder. Otherwise, picture distortion may occur.

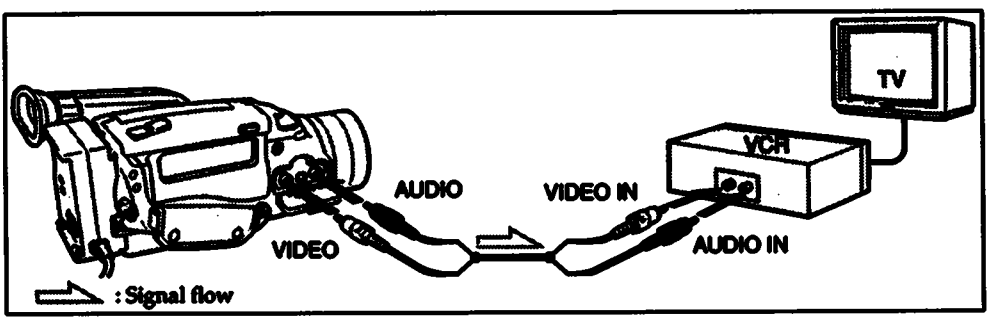
Connecting Directly to a TV

Connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.



If your VCR is already connected to a TV

Connect the camcorder to the LINE IN inputs on the VCR by using the A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.



To connect a TV or a VTR without audio/video input jacks

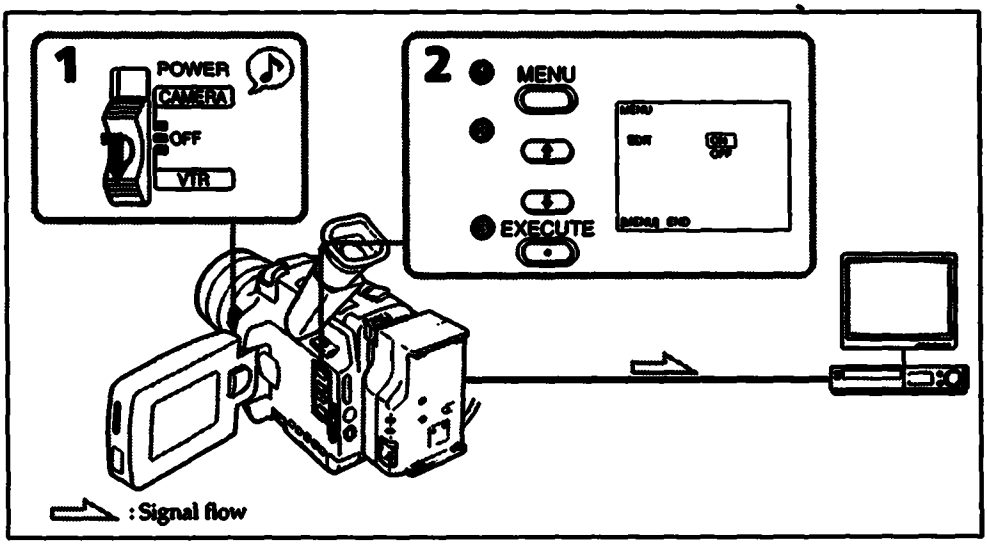
Use the RFU-95UC RFU adaptor (not supplied).

Editing onto Another Tape

You can create your own video program by editing with any other 8 mm, Hi8, VHS, S-VHS, VHSC, S-VHSC, Betamax or ED Betamax VCR that has audio/video inputs.

Before Editing

Connect the camcorder to the VCR using the supplied A/V connecting cable. (p. 27)
Set the input selector on the VCR to LINE, if available.
(1) Set the POWER switch to VTR.
(2) Set EDIT to ON in the menu system (p. 26).



Starting Editing

Turn down the volume of the camcorder while editing. Otherwise, picture distortion may occur.
(1) Insert a blank tape (or a tape you want to record over) into the VCR and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then put the camcorder in Playback pause mode.
(3) On the VCR, locate the recording start point and put the VCR in recording pause mode.
(4) Press II on the camcorder and VCR simultaneously to start editing.

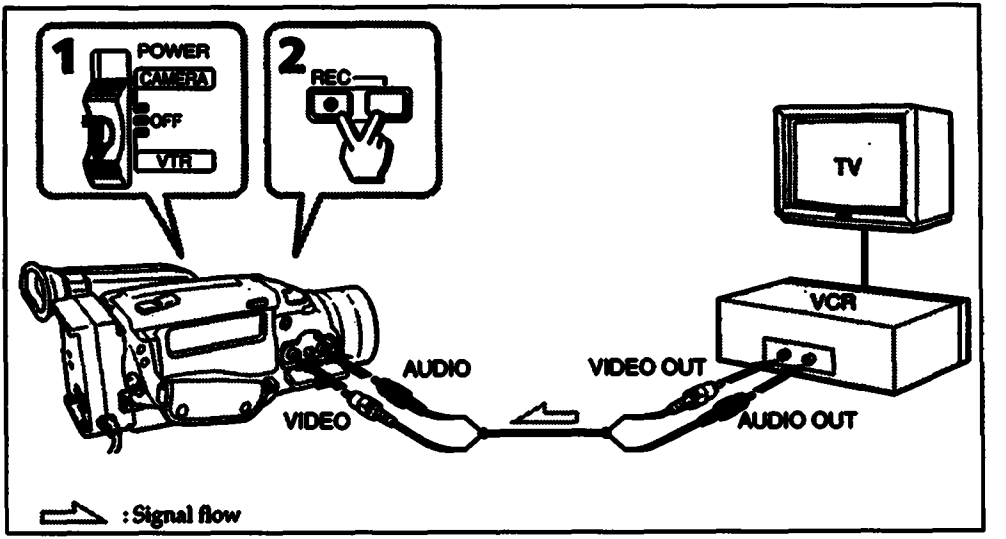
To Edit More Scenes
Repeat steps 2 to 4.

To Stop Editing
Press □ on both the camcorder and the VCR.

Use of the EDITSEARCH button
You can play back the tape in the normal/reverse direction by holding down EDITSEARCH during playback pause mode. You can also play back still pictures successively at specific intervals by pressing EDITSEARCH intermittently.

Recording from a TV or VCR

You can record a tape from another VCR or a TV program from a TV that has audio/video outputs.
Connect the camcorder to the TV or VCR.
Turn down the volume of the camcorder while editing. Otherwise, the picture distortion may occur.
(1) Set the POWER switch to VTR.
(2) Press REC ● and the button on the right together at the point where you want to start recording.



To Check the Picture from a TV or VCR before Recording

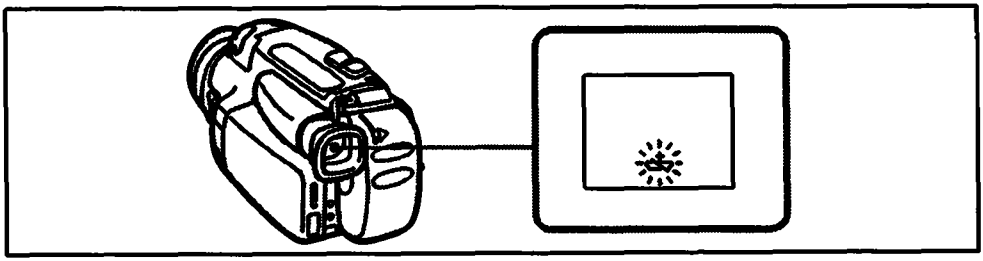
You can check the picture in the viewfinder or on the LCD screen.

To stop Recording

Press □.

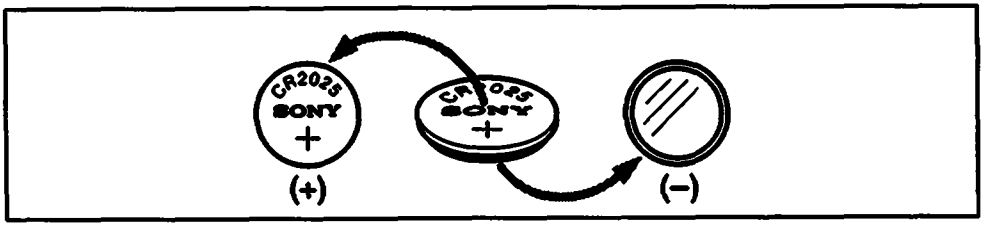
Changing the Lithium Battery

Your camcorder is supplied with a lithium battery installed. The lithium battery for the camcorder lasts for about 1 year under normal operation. When the battery becomes weak or dead, the ⁂ indicator flashes in the viewfinder or on the LCD screen for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**



Note on Lithium Battery

The lithium battery has a positive (+) side and a negative (–) side as illustrated. Be sure to insert the lithium battery with the positive side facing out.



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

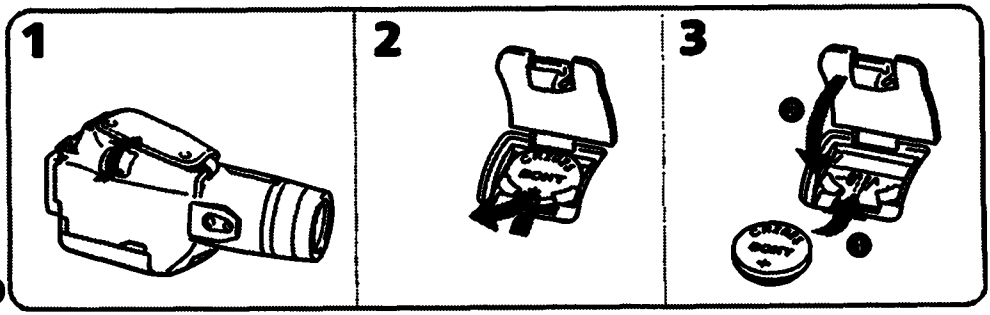
Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

Changing the Lithium Battery

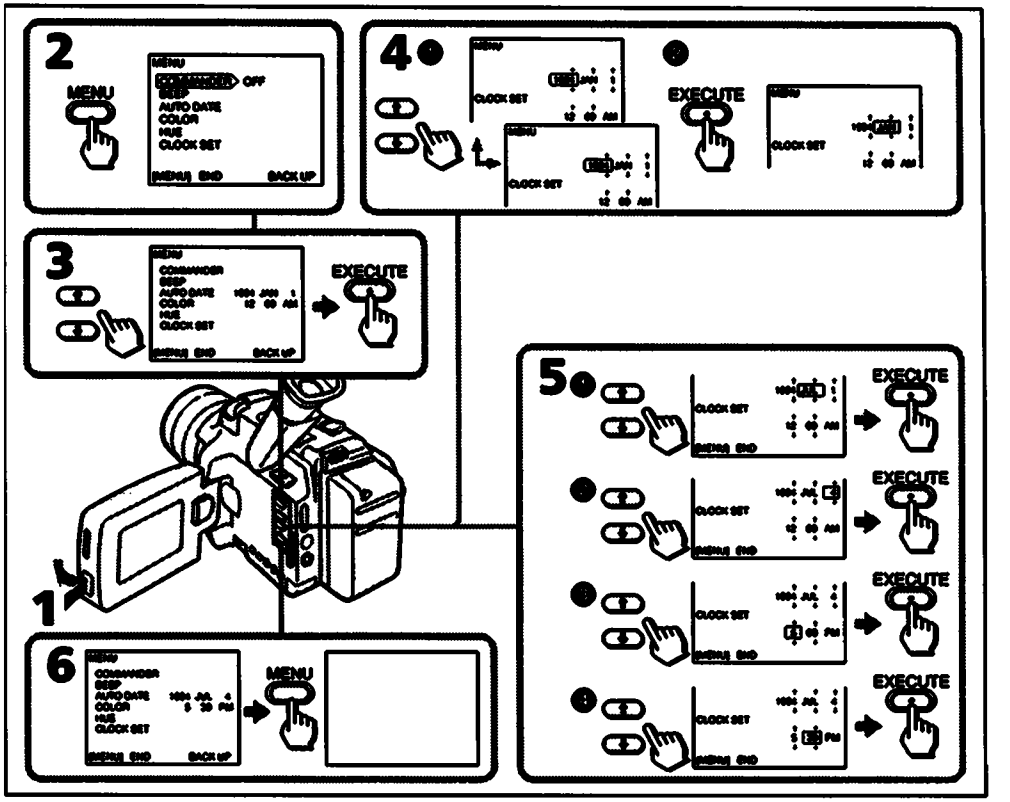
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time, age and other BACK UP items in the menu system.

(1) Open the lid of the lithium battery compartment under the grip strap of the camcorder.
(2) Push the battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.



Resetting the Date or Time

You can reset the date or time in the menu system.
(1) While pressing PUSH OPEN, open the LCD panel.
(2) Press MENU to display the menu on the LCD screen.
(3) Select CLOCK SET, then press EXECUTE.
(4) Press ♦ or ♦ to adjust the year, and then press EXECUTE.
(5) Press ♦ or ♦ to adjust the month, day, hour and minutes, and then press EXECUTE. Note that when you hold down ♦ or ♦, the indications in the menu display advance faster.
(6) Press MENU to erase the menu display.



To Check the Preset Date and Time

Press DATE(+) to display the date indicator.
Press TIME(NEXT) to display the time indicator. When you press the same button again, the indicator goes off.

Note on the setting of the year

When you set the year, each time you press DATE(+) the digits change as follows.

1994 → 1995 → --- → 2024

Note on the time indicator

The internal clock of this camcorder operates on a 12-hour cycle.
12:00 AM stands for midnight.
12:00 PM stands for noon.

Playback Modes

The playback mode (SP or LP) is selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

LP (long play) mode
When you play back a tape recorded in LP mode, the LP indicator lights up on the LCD screen or in the viewfinder. This camcorder cannot record a tape in LP mode.

Foreign 8 mm video
You cannot play back software recorded on a different TV color system. Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded software. Refer to page 39 to check the TV color system of foreign countries.

Tips for Using the Battery Pack

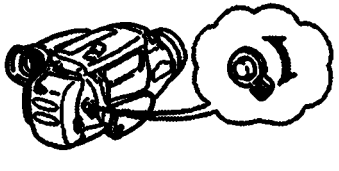
This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

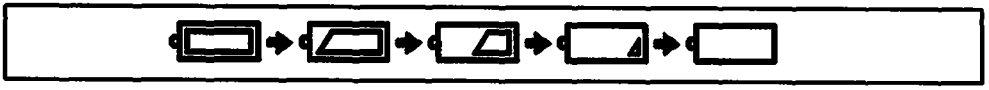
Battery Life is Shorter in Cold Environment
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in a cold environment.

To Save Battery Power
Turn STANDBY on the camcorder down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, looking through the viewfinder lens or at the LCD screen, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.



When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator in the viewfinder or on the LCD screen decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the ⇦ indicator appears and starts flashing in the viewfinder or on the LCD screen. [a]
When the ⇦ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, slide the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack is replaced.

Note on the remaining battery indicator

The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of a battery pack with its own indicator (not supplied). The indicator on the battery pack is more accurate.

Notes on the Rechargeable Battery Pack

The Battery Pack Heats Up

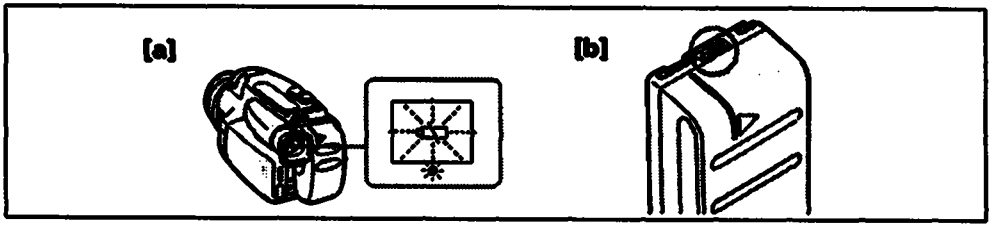
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

Battery Pack Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery pack right before using the camcorder.

How to Use the Switch on the Battery Pack

This switch is provided so that you can mark the charged battery pack. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself). [b]



The Life of the Battery Pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

See the next page for further information.

Tips for Using the Battery Pack

Charging Temperature
You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Sony Batteries are Recommended
Use of non-Sony batteries may damage your Handycam camcorder.

Notes on Charging

A Brand-new Battery Pack
A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Before Recharging a Used Battery Pack
- Make sure to use up the battery before recharging.
- If recording is completed before the CD indicator appears in the viewfinder, you should remove the tape, slide the POWER switch to CAMERA, turn STANDBY up, and leave the camcorder until the battery indicator flashes rapidly.
- When you use the AC-S10 power adaptor or the BC-S10 portable battery charger, you can use the discharging function.
- **Charging a usable battery pack causes a lowering of battery capacity. Battery capacity can be recovered if you fully discharge and charge the battery pack again.**

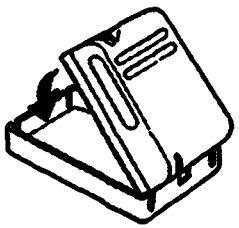
After Long Storage
Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Notes on the Terminals

If the terminals (metal parts on the back) are not clean, the battery duration will be shortened. When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Be Sure to Observe the Following
- To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. When carrying the battery pack, attach the terminal cover. [c]
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

[c]



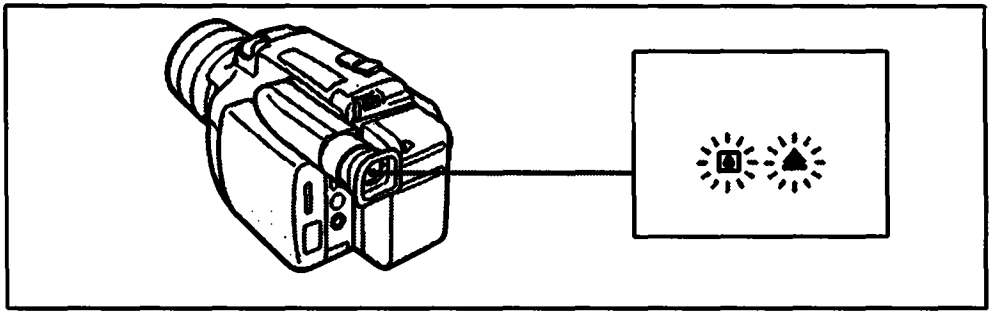
Maintenance Information and Precautions

Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When the ⊞ and ⏏ indicators flash in the viewfinder or on the LCD screen, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ⊞ indicator does not appear when the power is turned on again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert the cassette and press a tape transport button (▷ PLAY, etc.), the ⏏ indicator in the viewfinder or on the LCD screen flashes.
In this case, no other functions except for tape ejection will work.
Eject the tape, turn off the camcorder and leave it with the cassette holder open for at least one hour. The camcorder can be used again if the ⏏ indicator does not appear when you insert the cassette and press one of the tape transport buttons.

On the Lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about one hour.

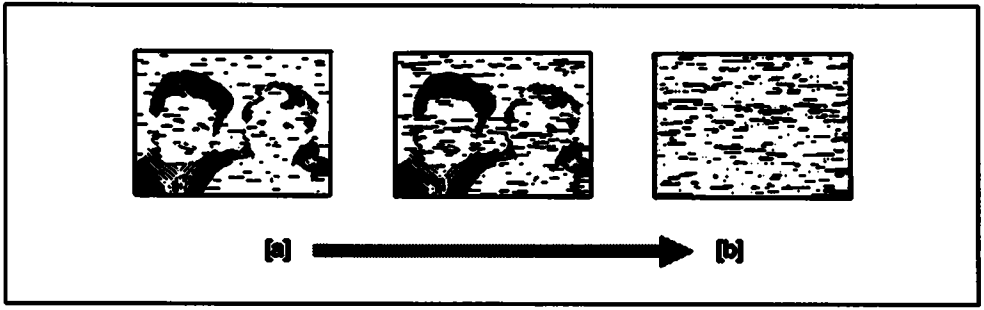
How to Prevent Moisture Condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.
(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Video Head Cleaning

To ensure normal recording and clear pictures, clean the video heads often. When the ⊗ indicator in the viewfinder or on the LCD screen flashes or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution

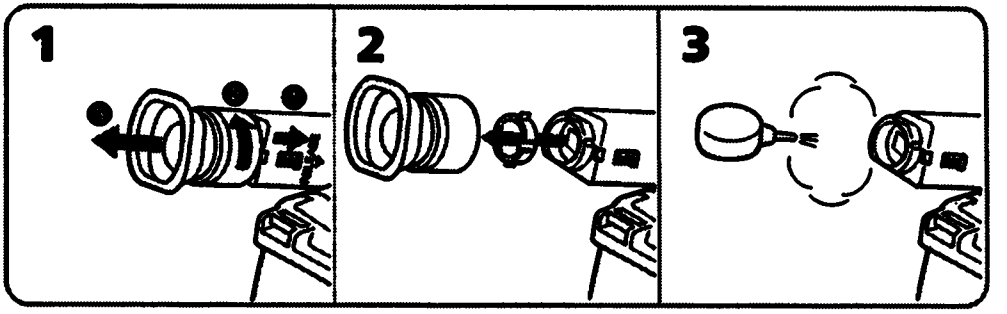
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

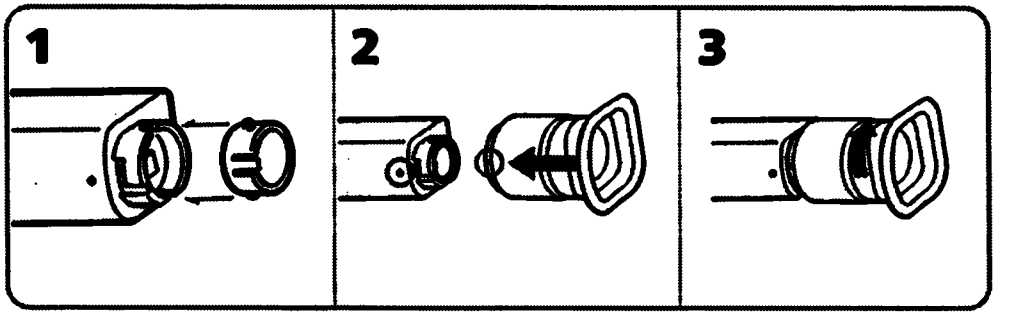
Removing Dust from Inside the Viewfinder

(1) While holding down RELEASE on the viewfinder barrel, turn the eyecup in the direction of the arrow and pull it out.
(2) Remove the small lens from inside the viewfinder.
(3) Clean the surface with a commercially available blower.



To Reattach the Eyecup

(1) Replace the small lens inside the viewfinder. Be sure to replace it with the correct side.
(2) Align the groove on the eyecup with the ● mark on the barrel.
(3) Turn the eyecup clockwise.



Precautions

Camcorder Operation

- Operate the camcorder on 6.0 V (battery pack) or 7.5 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not push the LCD screen.
- If the camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- Constant bright points of light (red, blue, or green) may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On Handling Tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type, thickness of tape or if the tab is out or in.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Clean the LCD screen with the supplied LCD screen cleaner cloth to remove fingerprints.

AC Power Adaptor

Charging

- Repeated charging while some capacity remains causes a lowering of battery capacity. However, the original battery capacity can be recovered if you use the battery completely and charge it fully again.
- Charge the battery pack on a flat surface without vibration.
- The battery pack will get hot during charging. This is normal.

Others

- Model for the USA and Canada: One blade of the plug is wider than the other for safety purposes and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall (mains) outlet when not in use for a long time. To disconnect the cord (mains lead), pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

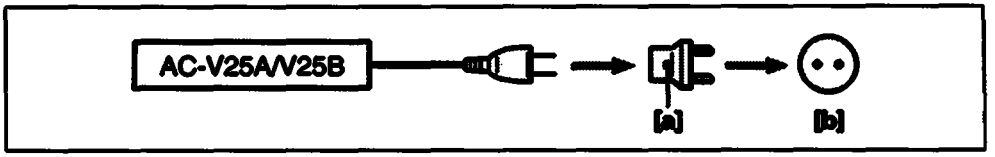
If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Using Your Camcorder Abroad

Each country has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power Sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60Hz.
Use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



Difference in Color Systems

This camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV or a PAL-M system based TV with an NTSC/PAL-M transcoder. Check the following list.

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, former West Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system country
Brazil

PAL-N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, France, Guiana, Hungary, Iran, Iraq, Monaco, Poland, former Soviet Union, etc.

Trouble Check

If you run into any problem using the camcorder, use the following table to troubleshoot the problem. Should the difficulty persist, disconnect the power source and contact your Sony dealer or local authorized Sony service facility.

Camcorder

	Symptom	Cause	Corrective Actions	Page
Power	The power is not on.	The battery pack is not attached.	Attach the battery pack.	8
		The battery is dead.	Use a charged battery pack.	6
		The AC power adaptor is not connected to a wall outlet.	Connect the AC power adaptor to a wall outlet.	18
	The power goes off.	While being operated in CAMERA mode, the camcorder has been in the standby mode for more than 5 minutes.	Turn STANDBY down once and turn it up again.	10
		The battery is dead.	Use a charged battery pack.	6
	The battery pack is quickly discharged.	The ambient temperature is too low.	—	32
		The battery pack has not been charged fully.	Charge the battery pack again.	6
		The battery pack is completely dead, and cannot be recharged.	Use another battery pack.	33
Operation	START/STOP does not operate.	The POWER switch is set to VTR.	Set it to CAMERA.	10
		The tab on the cassette is out (red).	Use a new tape or slide the tab.	9
		The tape has run out.	Rewind the tape or use a new one.	16
		The tape is stuck to the drum.	Eject the tape.	9
	The cassette cannot be removed from the holder.	The battery is dead.	Use a charged battery pack or the AC power adaptor.	6 18
	No function except for cassette ejection works.	Moisture condensation has occured.	Remove the cassette and leave the camcorder for at least an hour.	35
	The date or time indicator is flashing.	You pressed DATE(+) and TIME(NEXT) together for more than 2 seconds.	The camcorder is not malfunctioning. You may start recording. Flashing will stop soon.	—
	The tape does not move when a tape transport button is pressed.	The POWER switch is set to CAMERA or OFF.	Set it to VTR.	16
		The tape has run out.	Rewind the tape or use a new one.	16

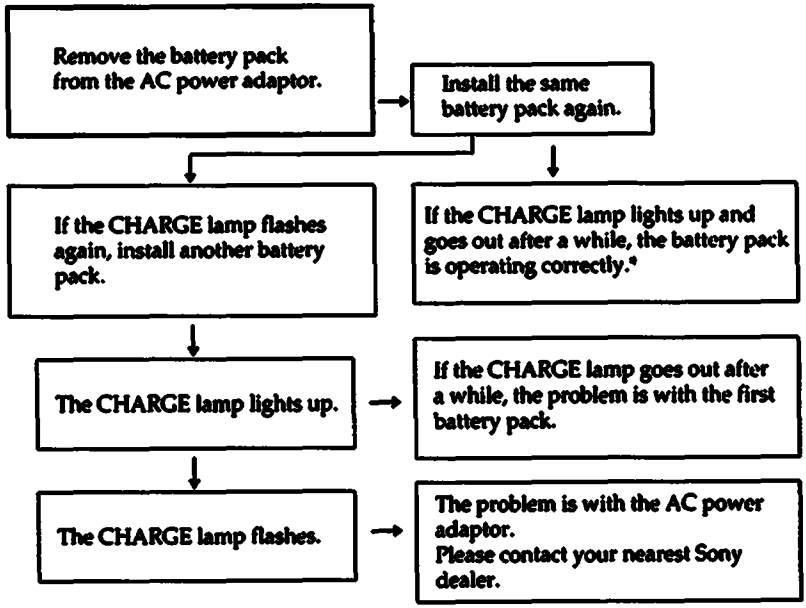
	Symptom	Cause	Corrective Action	Page
Picture	The image on the viewfinder screen is not clear.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens.	11
	A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	The contrast between the subject and background is too high.	The camcorder is not malfunctioning. Change location.	—
	The playback picture is not clear.	EDIT is set to ON in the menu system.	Set it to OFF.	26
	The picture is "noisy."	The video heads may be dirty.	Clean the heads using the Sony V8-25CLH cleaning cassette.	36
	The picture does not appear in the viewfinder.	The LCD panel is open.	Close the LCD panel.	17
	The picture does not appear on the LCD screen.	Incorporated fluorescent tube is worn out.	Please contact your nearest Sony dealer.	—
Others	The supplied remote controller does not work.	COMMANDER is set to OFF in the menu system.	Set it to ON.	48
		Something is blocking the infrared rays.	Remove the obstacle.	—
		The battery is not inserted with the correct polarity.	Insert the battery with the correct polarity.	47
		The batteries are dead.	Insert new ones.	48
	There is dust in the viewfinder.	—	Remove the viewfinder barrel and clean the viewfinder screen or viewfinder lens.	37

(to be continued)

AC Power Adaptor

	Symptom	Cause	Corrective Action	Page
AC Power Adaptor	The POWER lamp does not light.	—	Set the selector to the center position and disconnect the power cord. After about 1 minute, reconnect the power cord and set the selector to CHARGE again.	6
	The CHARGE lamp flashes.	See the following chart.		

When the CHARGE Lamp Flashes
Check through the following chart.


Remove the battery pack from the AC power adaptor.
Install the same battery pack again.
If the CHARGE lamp flashes again, install another battery pack.
If the CHARGE lamp lights up and goes out after a while, the battery pack is operating correctly.*
The CHARGE lamp lights up.
If the CHARGE lamp goes out after a while, the problem is with the first battery pack.
The CHARGE lamp flashes.
The problem is with the AC power adaptor.
Please contact your nearest Sony dealer.

* If you use a battery pack which you have just bought or which has been left unused for a long time, the CHARGE lamp may flash at the first charging. This does not indicate a problem. Repeat again to charge with the same battery pack.

Specifications

Video Camera Recorder

System

Video recording system
Two rotary heads, Helical scanning FM system
Audio recording system
Rotary heads, FM system
Video signal
NTSC color, EIA standards
Usable cassette
8 mm video format cassette (standard 8 mm)
Tape speed
SP mode: Approx. 19/32 inches (1.43 cm)/second
LP mode: Approx. 5/16 inches (0.72 cm)/second (playback only)
Recording time
SP mode: 2 hours (P6-120)
Playback time
SP mode: 2 hours (P6-120)
LP mode: 4 hours (P6-120)
Fastforward/rewind time
Approx. 6 min 30 sec (P6-120)
Image device
CCD (Charge Coupled Device)
Viewfinder
Electronic viewfinder (monochrome)
Lens
Combined 12 x Power zoom lens
Filter diameter 2 1/8 inches (52 mm)
TTL autofocus system
Inner focus wide macro system
Focal distance
f = 7/32 – 2 5/8 inches (5.4 – 64.8 mm)
F1.8 – 2.7
(1 9/16 – 18 1/2 inches (39 – 468 mm) when converted to a 35 mm still camera)
Color temperature
Auto
Minimum illumination
2 lux (F1.8)
Illumination range
2 lux to 100,000 lux
Recommended illumination
More than 100 lux

LCD screen

Picture
3 inches measured diagonally
2 1/2 x 1 3/4 inches (61.5 x 44.0 mm)
On-screen display
TN LCD/TFT active matrix method
Total dot number: 75,816 (324 x 234)

Input and output connectors

Video input/output
Phono jack, 1 Vp-p, 75 Ω, unbalanced, sync negative
Audio input/output
Phono jack
Input: 7.5 dB, input impedance more than 47 kΩ
Output: 7.5 dB, (at output impedance 47 kΩ) impedance less than 2.2 kΩ
RFU DC OUT
Special minijack, DC 5 V
Earphone jack
Minijack
LANC control jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Minijack, –66 dB low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kΩ (ø 3.5 mm)
Speaker
8 Ω

General

Power requirements
On battery mounting surface 6.0 V (battery pack)
7.5 V (AC power adaptor)
Average power consumption
6.9 W
During camera recording using the LCD
Installation
Vertically, horizontally
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to +140°F (–20°C to +60°C)
Dimensions
Approx. 4 3/4 x 4 3/8 x 10 1/4 inches (120 x 111 x 260 mm) (w/h/d)
Mass
Approx. 2 lb 7 oz (1,100 g) Excluding the battery pack, lithium battery, cassette and shoulder strap
Approx. 3 lb 2 oz (1,430 g) Including the battery pack NP-66, lithium battery CR2025, cassette P6-120, and shoulder strap
Microphone
Electret condenser microphone, monaural type
Supplied accessories
See page 5.

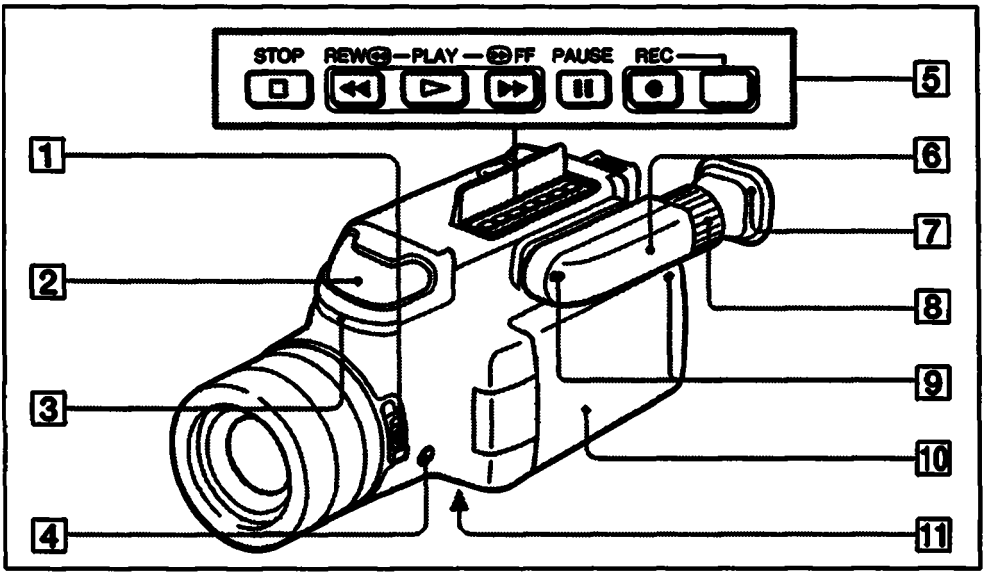
AC power adaptor

Power requirements
110 – 240 V AC*, 50/60 Hz
Power consumption
17 W
Output voltage
DC OUT: 7.5 V, 1.5 A in operating mode
Battery charge terminal: 10 V, 1.1 A in charge mode
Application
Sony battery packs NP-55H, NP-60D, NP-66/66H, NP-77H, NP-80/80D, NP-90/90D
Operating temperature
32°F to 104°F (0°C to 40°C)
Storage temperature
–4°F to +140°F (–20°C to +60°C)
Dimensions
Approx. 4 1/8 x 1 15/16 x 2 1/2 inches (103 x 49 x 63 mm) (w/h/d) including projecting parts and controls
Mass
Approx. 11 oz (320 g) (AC-V25A)
Approx. 10 oz (300 g) (AC-V25B)

* Canadian Standard Association (CSA) certifies 120 V AC only.

Design and specifications are subject to change without notice.

Identifying the Parts



1 **POWER switch** (p. 10, 16)

2 **Built-in microphone**

3 **Remote sensor** (p. 48)
Aim the Remote Commander here for remote control.

4 **FADER button** (p. 24)

5 **Tape transport buttons** (p. 16)

- □ STOP (stop)
- ◀◀ REW (rewind)
- ▷ PLAY (playback)
- ▶▶ FF (fastforward)
- ⏸ PAUSE
- ● REC (recording)

6 **Viewfinder** (p. 11)

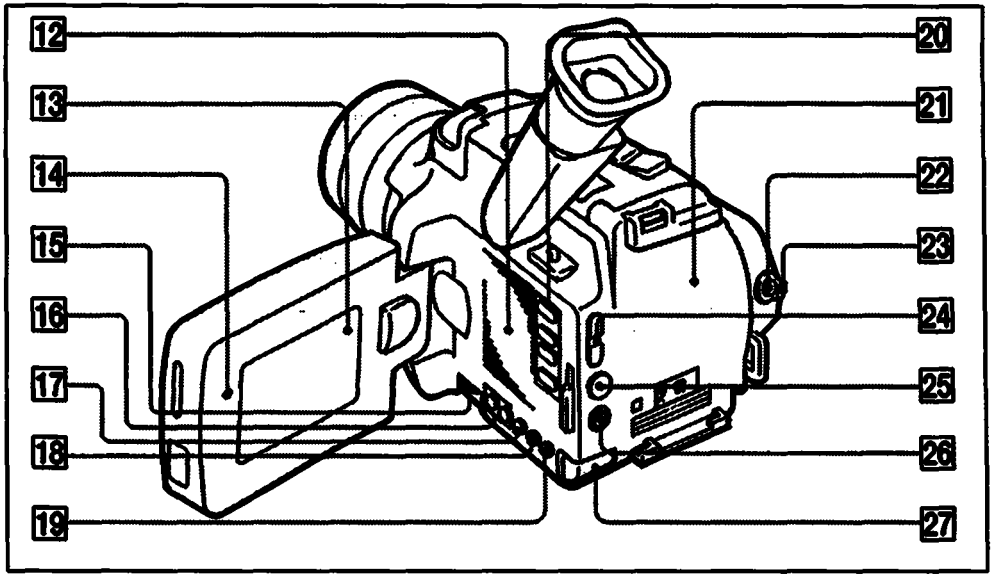
7 **Eyecup**

8 **Viewfinder lens adjustment ring** (p. 11)

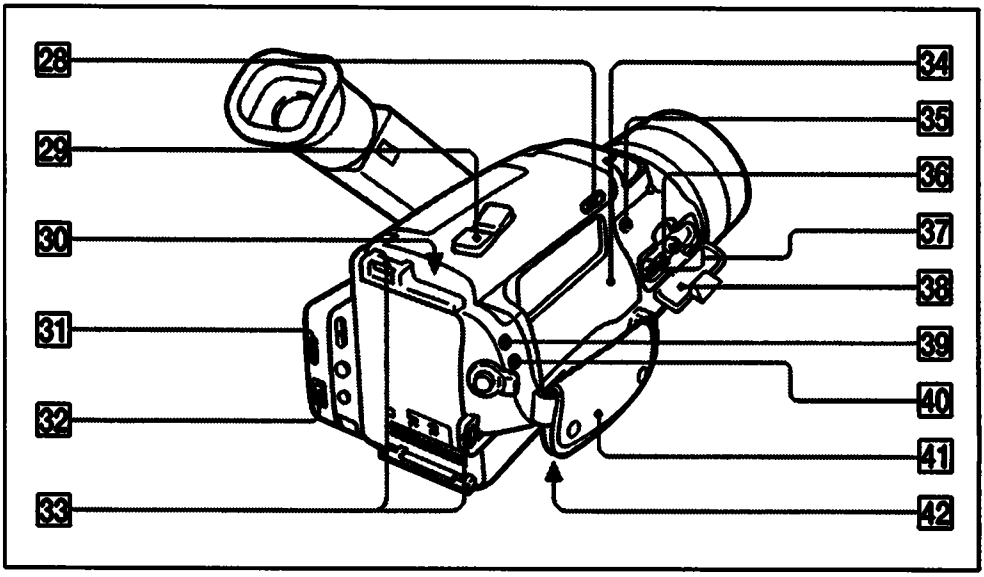
9 **Camera recording/battery lamp**

10 **LCD panel** (p. 11)

11 **Tripod receptacle** (p. 14)



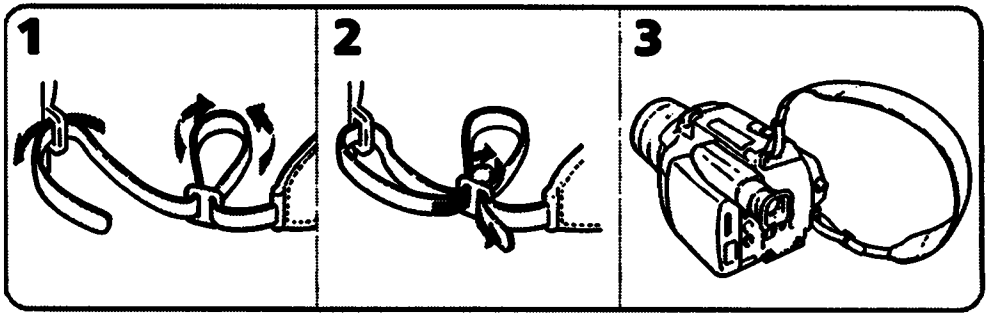
12 Speaker
13 LCD screen (p. 11)
14 Tally lamp
15 Volume dial (p. 16)
16 DATE(+) and TIME(NEXT) buttons (p. 19)
17 AGE/EVENT button (p. 20)
18 COUNTER RESET button (p. 12)
19 DISPLAY button (p. 17)
20 Menu operation buttons (p. 25)
21 Battery mounting surface (p. 8)
22 START/STOP button (p. 10)
23 STANDBY switch (p. 10)
24 EDITSEARCH button (p. 15)
25 PROGRAM AE button (p. 23)
26 BACK LIGHT button (p. 22)
27 BATT (battery eject) knob (p. 8)



28 **Lid lock** (p. 9)
29 **Power zoom button** (p. 13)
30 **Eject button (under the cover)** (p. 9)
31 **BRIGHT dial** (p. 11)
32 **PUSH OPEN button** (p. 11)
33 **Hooks for shoulder strap** (See below.)
34 **Cassette compartment** (p. 9)
35 **MIC jack (PLUG IN POWER)**
Connect an optional external microphone. This jack also accepts a "plug-in-power" microphone.
36 **RFU DC OUT (RFU adaptor DC output) jack**
37 **Audio/Video jacks** (p. 27)
38 **Jack cover**
39 **LANC control jack**
stands for Local Application Control Bus System. The control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.
40 **(Earphone) jack** (p. 17)
41 **Grip strap** (p. 14)
42 **Lithium battery compartment** (p. 30)

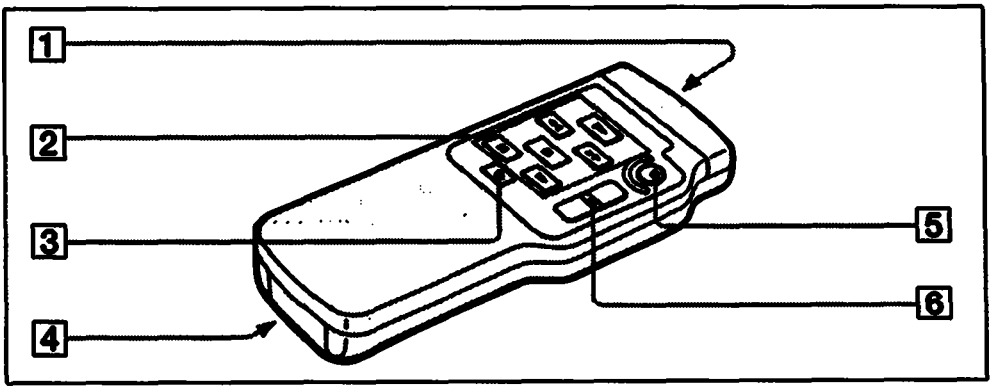
Attaching the Shoulder Strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (33).



Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



1 Transmitter
Point toward the remote sensor to control the camcorder after turning on the POWER switch on the camcorder.

2 Tape transport buttons

3 DISPLAY button
Press to erase the screen indicators on the LCD screen. To display the indicators, press again.
The indicators don't appear on the TV.

4 Size AA (R6) battery holder

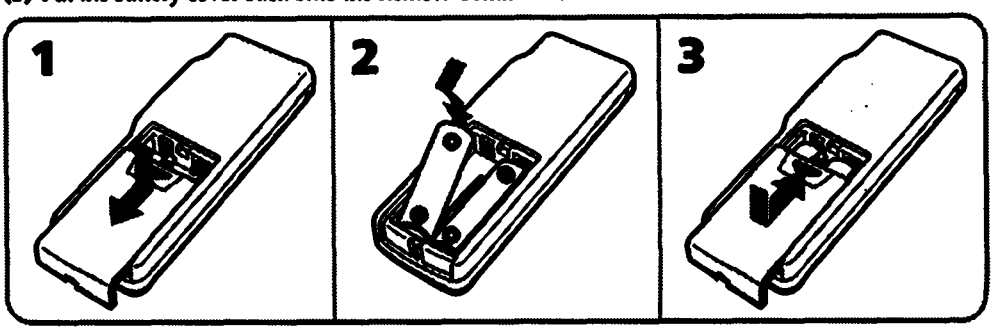
5 START/STOP button

6 Power zoom button
The zooming speed is unchangeable in the Remote Commander.

Preparing the Remote Commander

To use the Remote Commander, you must insert two size AA (R6) batteries. Use the supplied size AA (R6) batteries.

(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the size AA (R6) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.

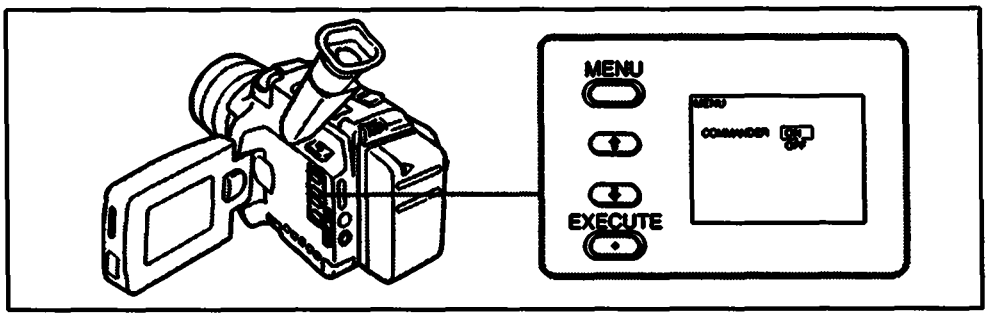


Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

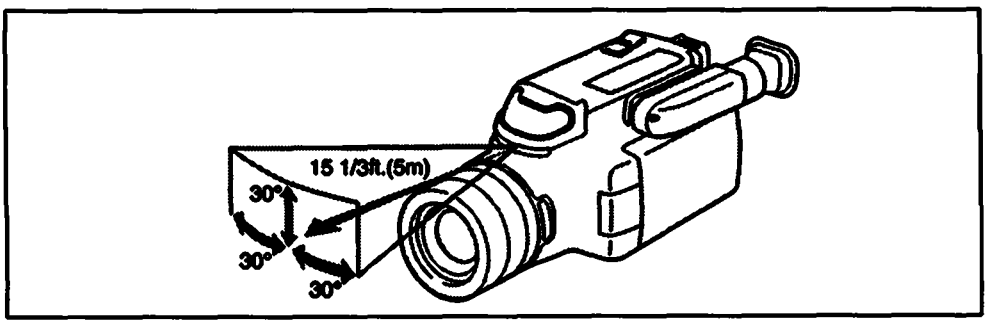
To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

Using the Remote Commander

Make sure that the COMMANDER mode is set to ON in the menu system.



Remote Control Direction



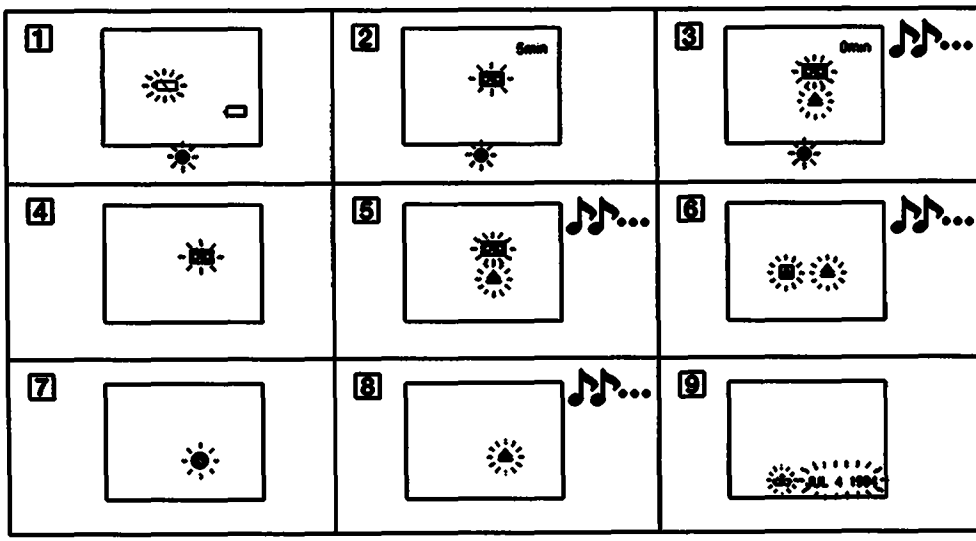
Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Indicators in the Viewfinder

Warning Indicators

If indicators in the viewfinder, on the LCD screen or a caution lamp on the camcorder flash, check the following:
♪ : you can hear the beep sound when the BEEP is set to ON.



1 The battery is weak or dead.
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.
The flashing is slow.

3 The tape has run out.
The flashing becomes rapid.

4 No tape has been inserted.

5 The tab on the tape is out (red).

6 Moisture condensation has occurred. (p. 35)

7 The video heads may be contaminated. (p. 36)

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 The lithium battery is weak or is not installed.

For Product information or operation, call:
SONY CUSTOMER INFORMATION CENTER
201-368-9272

or write to:
Sony Customer Information Center
One Sony Drive
Park Ridge, New Jersey 07656-8003

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